

WE CLAIM:

1. A method for identifying telemarketer communications directed to a subscriber of a call screening service comprising:

receiving a call from a calling party directed to a subscriber of the call screening service;

determining whether a telephone directory number of the calling party is known;

if the telephone directory number of the calling party is known, determining whether the telephone directory number of the calling party matches one or more telephone directory numbers stored in a database of telephone directory numbers associated with telemarketer communications; and

if the telephone directory number of the calling party matches one or more of the telephone directory numbers stored in the database of telephone directory numbers associated with telemarketer communications, intercepting the call from reaching the subscriber of the call screening service.

2. The method of claim 1, prior to determining whether the telephone directory number of the calling party matches one or more telephone directory numbers stored in the database of telephone directory numbers associated with telemarketer communications further comprising:

monitoring all inbound and outbound calls of a carrier network;

receiving and collecting a calling telephone directory number, a called telephone directory number, and a termination status for at least each inbound call to the calling telephone directory numbers wherein the termination status comprises an indicator as to whether an inbound or an outbound call is terminated;

analyzing the calling and called telephone directory numbers and the termination status of at least each inbound call to the calling telephone directory numbers to determine a calling pattern for each calling telephone directory number;

determining whether the calling pattern of one or more calling telephone directory numbers match a profile of telemarketer communications; and

if the calling pattern of one or more calling telephone directory numbers match the profile of telemarketer communications, storing the one or more calling telephone directory numbers in the database of telephone directory numbers associated with telemarketer communications.

3. The method of claim 2, further comprising:

prior to analyzing the calling and called telephone directory numbers and the termination status of at least each inbound call to the calling telephone directory numbers, receiving and collecting a time of each inbound and outbound call of the carrier network; and

in addition to analyzing the calling and called telephone directory numbers and the termination status of at least each inbound call to the calling telephone directory numbers, analyzing the time of each inbound and outbound call to determine a calling pattern for each calling telephone directory number.

4. The method of claim 2, further comprising:

determining whether the calling pattern of each calling telephone directory number stored in the database of telephone directory numbers associated with telemarketer communications continues to match the profile of telemarketer communications; and

if the calling pattern of one or more of the calling telephone directory numbers stored in the database of telephone directory numbers associated with telemarketer communications no longer continues to match the profile of telemarketer communications, removing the one or more calling telephone directory numbers from the database of telephone directory numbers associated with telemarketer communications.

5. The method of claim 4, wherein determining whether one or more of the calling telephone directory numbers stored in the database of telephone directory numbers associated with telemarketer communications continues to match the profile of telemarketer communications comprises at least one of the following:

detecting whether one or more of the calling telephone directory numbers stored in the database continue to be monitored as having a calling pattern that matches the profile of telemarketer communications;

determining whether one or more calling telephone directory numbers having a calling pattern that initially matched the profile of telemarketer communications have a non-telemarketing purpose, thereby no longer matching the profile; and

detecting whether one or more of the calling telephone directory numbers stored in the database are disconnected.

6. The method of claim 1, further comprising:

in response to intercepting the call from reaching the subscriber of the call screening service, requesting that the calling party record a name of the calling party prior to routing the call to the subscriber;

if the calling party records the name of the calling party, routing the call to the subscriber and notifying the subscriber of the call and the name of the calling party;

if the calling party does not record the name of the calling party, disconnecting the call; and

in response to routing the call to the subscriber and notifying the subscriber of the call and the name of the calling party, the subscriber completing one of the following:

answering the call;

choosing to ignore the call and sending the calling party a message that the subscriber is unavailable; or

sending a message to the calling party not to call the subscriber again and to add the subscriber to a no call list of the calling party.

7. The method of claim 1, further comprising at least one of the following:

- in response to intercepting the call from reaching the subscriber of the call screening service, completely blocking the call from reaching the subscriber; and
- in response to intercepting the call from reaching the subscriber of the call screening service, routing the call to a voice mail system of the subscriber.

8. The method of claim 1, wherein the call received from the calling party triggers a terminating attempt trigger at a service switching point that services a telephone of the subscriber and wherein determining whether a telephone directory number of the calling party is known comprises:

in response to triggering the terminating attempt trigger, transmitting a query from the service switching point to a service control point via a signal transfer point over one or more signaling system data links wherein the query includes a telephone directory number of the subscriber, the telephone directory number of the calling party, and a presentation restriction indicator of the calling party; and

checking the presentation restriction indicator at the service control point executing a service package application for the call screening service wherein if the presentation restriction indicator of the calling party is unrestricted, then the telephone directory number of the calling party is known.

9. The method of claim 8, wherein the database of telephone directory numbers associated with telemarketer communications is shared among all subscribers to the call screening service and all the service control points executing the service package application for the call screening service.

10. The method of claim 2, wherein the carrier network comprises a network having transport and signaling capabilities and wherein monitoring all inbound and outbound calls of the carrier network comprises connecting a link monitoring system to one or more signal transfer points within the carrier network, wherein the link monitoring system is equipped with a passive monitoring connection that monitors and conveys for collection in the link monitoring system one or more signal system protocol messages including the calling and called telephone directory numbers and the termination status of at least each inbound call to the calling telephone directory numbers routed by the signal transfer points.

11. The method of claim 2, wherein the calling and called telephone directory numbers and the termination status of at least each inbound call to the calling telephone directory numbers are analyzed by a telemarketer detection module to determine the calling pattern of each calling telephone directory number and wherein the profile of telemarketer communications for a calling telephone directory number comprises:

a quantity of calls originating from the calling telephone directory number equal to or exceeding a predetermined minimum threshold quantity over a data collection cycle; and

a quantity of calls terminating at the calling telephone directory number being less than or equal to a predetermined maximum threshold quantity over the data collection cycle.

12. The method of claim 3, wherein the calling and called telephone directory numbers, the termination status of at least each inbound call to the calling telephone directory numbers, and the time of each inbound and outbound call are analyzed by a telemarketer detection module to determine the calling patterns of one or more calling telephone directory numbers and wherein the profile of telemarketer communications for a calling telephone directory number comprises:

a quantity of calls originating from the calling telephone directory number equal to or exceeding a predetermined minimum threshold quantity between a specified time interval;

a quantity of calls terminating at the calling telephone directory number being less than or equal to a predetermined maximum threshold quantity between the specified time interval; and

the majority of calls originating from the calling telephone directory number between the specified time interval wherein the specified time interval comprises a typical time period when telemarketer calls are initiated.

13. The method of claim 1, wherein the database of telephone directory numbers associated with telemarketer communications is populated by at least one of the following:

one or more calling party telephone directory numbers matching a profile of telemarketer communications;

one or more calling party telephone directory numbers identified by one or more called parties as a telemarketer number;

one or more calling party telephone directory numbers self-identified by one or more telemarketers; and

one or more calling party telephone directory numbers received from a regulatory database of telemarketers required to identify their respective telephone directory numbers.

14. The method of claim 2, wherein the carrier network comprises network having transport and signaling capabilities and wherein monitoring all inbound and outbound calls of the carrier network comprises connecting a link monitoring system to one or more transfer points within the carrier network, wherein the link monitoring system is equipped with a passive monitoring connection that monitors and conveys for collection in the link monitoring system one or more session initiation protocol messages including the calling and called telephone directory numbers and the

termination status of at least each inbound call to the calling telephone directory numbers.

15. A system for identifying solicitor communications directed to one or more subscribers of a privacy screening service comprising:

means for receiving one or more calls directed to the subscribers of the privacy screening service;

means for determining whether a directory number of a calling party is known;

when the directory number of the calling party is known, means for determining whether the directory number of the calling party matches one or more directory numbers stored in a database of directory numbers associated with solicitor communications; and

means for intercepting the calls determined to match at least one of the directory numbers stored in the database of telephone directory numbers associated with solicitor communications from reaching the subscriber of the privacy screening service.

16. The system of claim 15, prior to determining whether the directory number of the calling party matches at least one of the directory numbers stored in the database of directory numbers associated with solicitor communications further comprising:

means for monitoring all inbound and outbound calls of a carrier network;

means for receiving and collecting a calling directory number, a called directory number, a termination status for at least each inbound call to the calling directory number, and a time of a monitored call for each monitored inbound and outbound call of the carrier network wherein the termination status comprises an indicator as to whether a monitored call is terminated;

means for analyzing the calling and called directory numbers, the termination status of at least each inbound call to the calling directory numbers, and the

time of each monitored call to determine one or more calling patterns of the calling directory numbers;

means for determining whether at least one calling pattern of each calling directory number matches a profile of solicitor communications; and

means for storing the calling directory numbers having at least one calling pattern that matches the profile of solicitor communications in the database of directory numbers associated with solicitor communications.

17. The system of claim 16, further comprising:

means for determining whether at least one calling pattern of one or more of the calling directory numbers stored in the database of directory numbers associated with solicitor communications continues to match the profile of solicitor communications; and

means for removing the calling directory numbers having at least one calling pattern no longer matching the profile of telemarketer communications from the database of telephone directory numbers associated with solicitor communications.

18. The system of claim 17, wherein means for determining whether one or more of the calling directory numbers stored in the database of directory numbers associated with solicitor communications continues to match the profile of solicitor communications comprises at least one of the following:

means for detecting whether one or more of the calling directory numbers stored in the database continue to be monitored as having a calling pattern that matches the profile of solicitor communications;

means for determining whether there is a non-telemarketing purpose for a calling directory number to match the profile of solicitor communications, thereby no longer matching the profile of solicitor communications; and

means for detecting whether one or more of the calling directory numbers stored in the database are disconnected.

19. The system of claim 15, further comprising:

in response to intercepting the calls from reaching the subscribers of the privacy screening service, means for requesting that the calling party record a name of the calling party prior to routing the call to the subscribers;

when the calling party records the name of the calling party, means for routing the call to the subscribers and notifying the subscribers of the call and the name of the calling party;

when the calling party does not record the name of the calling party, means for disconnecting the call; and

in response to routing the call to the subscribers and notifying the subscribers of the call and the name of the calling party, the subscribers completing at least one of the following:

answering the call;

choosing to ignore the call and sending the calling party a message that the subscriber is unavailable; and

sending a message to the calling party not to call the subscribers again and to add the subscribers to a no call list of the calling party.

20. The system of claim 15, wherein the call received from the calling party triggers a terminating attempt trigger at a service switching point that services a telephone of the subscriber and wherein determining whether a telephone directory number of the calling party is known comprises:

in response to triggering the terminating attempt trigger, transmitting a query from the service switching point to a service control point via a signal transfer point over one or more signaling system data links wherein the query includes a directory number of the subscriber, the directory number of the calling party, and a presentation restriction indicator of the calling party; and

checking the presentation restriction indicator at the service control point executing a service package application for the privacy screening service wherein if the

presentation restriction indicator of the calling party is unrestricted, then the directory number of the calling party is known.

21. The system of claim 20, wherein the database of directory numbers associated with solicitor communications is shared among all subscribers to the call screening service.

22. The system of claim 15, wherein the calling and called telephone directory numbers, the termination status of at least each inbound call to the calling directory numbers, and the time of each monitored call are analyzed by a telemarketer detection module to determine the calling patterns and wherein the profile of telemarketer communications for a calling telephone directory number comprises:

a quantity of outbound calls originating from the calling telephone directory number equal to or exceeding a predetermined minimum threshold quantity between a certain time interval;

a quantity of inbound calls terminating at the calling telephone directory number being less than or equal to a predetermined maximum threshold quantity between the certain time interval; and

a majority of outbound calls originating from the calling telephone directory number between the certain time interval wherein the certain time interval comprises a typical time period when telemarketer calls are initiated.

23. A method for identifying solicitor communications directed to one or more subscribers of a call screening service comprising:

determining whether one or more telephone numbers of calling parties attempting to call one or more of the subscribers are known;

if the one or more telephone numbers of the calling parties are known, determining whether the one or more telephone numbers of the calling parties match one or more telephone numbers stored in a database of telephone numbers associated with solicitor communications; and

if the one or more telephone numbers of the calling parties match one or more of the telephone numbers stored in the database of telephone numbers associated with solicitor communications, intercepting all calls from the calling parties having telephone numbers stored in the database from reaching the subscribers of the call screening service.

24. The method of claim 23, prior to determining whether the telephone numbers of calling parties match one or more telephone numbers stored in the database of telephone numbers associated with solicitor communications further comprising:

monitoring all inbound and outbound calls of a carrier network;

receiving and storing a calling telephone, a called telephone directory number, and a termination status for at least each inbound call to the calling telephone numbers wherein the termination status comprises an indicator as to whether an inbound or an outbound call is terminated;

analyzing the calling and called telephone numbers and the termination status of at least each inbound call to the calling telephone numbers to determine a calling pattern for each calling telephone number;

determining whether the calling pattern of one or more calling telephone numbers match a profile of solicitor communications; and

if the calling pattern of one or more calling telephone numbers match the profile of telemarketer communications, storing the one or more calling telephone numbers in the database of telephone directory numbers associated with solicitor communications.